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(54) Title: ARTICLE OF MANUFACTURE

(57) Abstract: The present invention relates to an article of manufacture comprising: a container; a set of instructions; and a liquid bleaching composition comprising a peroxygen bleach; wherein said set of instructions comprises instructions to contact dark colored fabric items with said liquid bleaching composition in its neat or diluted form and wash said dark colored fabric items in an aqueous bath comprising water and a conventional laundry detergent before and/or during and/or after the step of contacting said dark colored fabric items with said liquid bleaching composition and wherein said container contains said liquid bleaching composition and wherein said container contains said liquid bleaching composition. Furthermore, the present invention relates to a method of instructing the public and to a method of promoting the use of liquid bleaching composition according to the present invention.

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## ARTICLE OF MANUFACTURE

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### Technical field

- 10 The present invention relates to an article of manufacture and in particular to an article of manufacture comprising : a container; a set of instructions; and a liquid bleaching composition comprising a peroxygen bleach inside said container.

### Background of the invention

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Bleach-containing compositions for treating fabrics are well known in the art.

- Peroxygen bleach-containing compositions have been extensively described in the art, especially in laundry applications as laundry additives and/or laundry pretreaters.
- 20

- Indeed, it is known to use such peroxygen bleach-containing compositions in laundry applications to boost the removal of dried on (encrusted) stains/soils and "problem" stains, such as grease, coffee, tea, grass, mud/clay-containing soils, which are otherwise particularly difficult to remove. In addition, peroxygen bleaches are safe to fabrics, specifically to dark colored fabric items, in particular when compared to other bleaches, as for example hypohalite bleaches.
- 25

- Nevertheless, peroxygen bleaching compositions are considered by the users of such compositions as damaging dark colored fabric items treated therewith. Indeed, the users of said compositions consider said compositions to cause color damage ("discoloration") of dyed fabric items treated with said compositions, in particular dark colored fabric items.
- 30

- 35 On the contrary, it is submitted that bleaching compositions comprising a peroxygen bleach show an excellent color safety performance. Indeed, such

bleaching compositions show an excellent color safety performance when used on dark colored fabric items and even on black fabric items. Moreover, it has been observed that bleaching compositions comprising a peroxygen bleach reduce or even prevent color bleeding when used to treat colored fabric items.

5 Hence, it is not just that such bleaching compositions do not show a negative effect regarding color safety when treating dark colored fabric items but there is even the beneficial effect of color bleeding reduction or even prevention when treating dark colored fabric items.

10 It is therefore an objective of the present invention to provide a user of a bleaching composition comprising a peroxygen bleach with a suitable way of treating dark colored fabric items.

It has now been found that this objective can be met by an article of manufacture according to the present invention comprising : a container; a set of instructions to treat dark colored fabric items; and a liquid bleaching composition comprising a peroxygen bleach, wherein said container contains said liquid bleaching composition. Furthermore, the objective can be met by the method of instructing the public according to the present invention and the method of promoting the

15 use of liquid bleaching composition according to the present invention.

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Advantageously, the bleaching compositions as described herein also provide excellent bleaching performance. More particularly, the compositions of the present invention provide excellent bleaching performance when used as a laundry additive and/or a laundry pretreater.

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A further advantage of the bleaching compositions according to the present invention is that they are able to perform in a variety of conditions, i.e., in hard and soft water as well as when used neat or diluted.

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#### Summary of the invention

The present invention encompasses an article of manufacture comprising : a container; a set of instructions; and a liquid bleaching composition comprising a peroxygen bleach; wherein said set of instructions comprises instructions to

35 contact dark colored fabric items with said liquid bleaching composition in its neat

or diluted form and wash said dark colored fabric items in an aqueous bath comprising water and a conventional laundry detergent before and/or during and/or after the step of contacting said dark colored fabric items with said liquid bleaching composition and wherein said container contains said liquid bleaching composition.

The present invention further encompasses a method of instructing the public by providing to the public a set of instructions for use of an article of manufacture comprising a container; and a liquid bleaching composition comprising a peroxygen bleach; wherein said set of instructions comprises instructions to contact dark colored fabric items with said liquid bleaching composition in its neat or diluted form and wash said dark colored fabric items in an aqueous bath comprising water and a conventional laundry detergent before and/or during and/or after the step of contacting said dark colored fabric items with said liquid bleaching composition and wherein said container contains said liquid bleaching composition and wherein said container contains said liquid bleaching composition.

The present invention further encompasses a method of promoting the use of liquid bleaching composition comprising peroxygen bleach to safely bleach and/or remove stains from colored fabric comprising dark and/or black colored fabric, the method comprising the step of informing the public that the treatment of dark and/or black colored fabric with said composition reduces and/or prevents damage to the color of said fabric.

#### Detailed description of the invention

##### The bleaching composition

The article of manufacture according to the present invention comprises a bleaching composition.

The bleaching composition according to the present invention is formulated as a liquid composition. By "liquid" it is meant to include conventional liquids, gels and pastes.

The bleaching compositions herein are preferably, but not necessarily formulated as aqueous compositions. Liquid bleaching compositions are preferred herein for convenience of use. Preferred liquid bleaching compositions of the present invention are aqueous and therefore, preferably may comprise water, more preferably may comprise water in an amount of from 60% to 98%, even more preferably of from 80% to 97% and most preferably 85% to 97% by weight of the total composition.

The pH of the liquid bleaching compositions herein, as is measured at 25°C, preferably is at least, with increasing preference in the order given, 0.1, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5 or 5. Independently, the pH of the liquid bleaching compositions herein, as is measured at 25°C, preferably is no more than, with increasing preference in the order given, 9, 8.5, 8, 7.5, 7, 6.5, 6 or 5.5.

In a preferred embodiment the liquid compositions according to the present invention are formulated in the neutral to the acidic pH range. It is within this neutral to acidic pH range that the optimum chemical stability and bleaching and/or cleaning performance of the peroxygen bleach as well as optimum fabric-and/or color-safety are obtained.

Accordingly, the compositions herein may further comprise an acid or a base to adjust the pH as appropriate.

Preferred acids herein are organic or inorganic acids or mixtures thereof. Preferred organic acids are acetic acid, citric acid or a mixture thereof. Preferred inorganic acids are sulfuric acid, phosphoric acid or a mixture thereof. A particularly preferred acid to be used herein is an inorganic acid and most preferred is sulfuric acid.

Typical levels of such acids, when present, are of from 0.01% to 3.0%, preferably from 0.05% to 2.0% and more preferably from 0.1% to 1.0% by weight of the total composition.

The bases to be used herein can be organic or inorganic bases. Suitable bases for use herein are the caustic alkalis, such as sodium hydroxide, potassium

hydroxide and/or lithium hydroxide, and/or the alkali metal oxides such, as sodium and/or potassium oxide or mixtures thereof. A preferred base is a caustic alkali, more preferably sodium hydroxide and/or potassium hydroxide.

- 5 Other suitable bases include ammonia, ammonium carbonate and hydrogen carbonate.

Typical levels of such bases, when present, are of from 0.01% to 1.0%, preferably from 0.05% to 0.8% and more preferably from 0.1% to 0.5% by weight  
10 of the total composition.

#### Peroxygen bleach

As an essential element the bleaching compositions according to the present invention comprise a peroxygen bleach.

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Suitable peroxygen bleaches to be used herein are selected from the group consisting of: hydrogen peroxide; water soluble sources of hydrogen peroxide; organic or inorganic peracids; hydroperoxides; diacyl peroxides; and mixtures thereof.

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As used herein a hydrogen peroxide source refers to any compound that produces perhydroxyl ions on contact with water. Suitable water-soluble sources of hydrogen peroxide for use herein include percarbonates, perborates and persulfates and mixtures thereof.

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Suitable diacyl peroxides for use herein include aliphatic, aromatic and aliphatic-aromatic diacyl peroxides, and mixtures thereof.

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Suitable aliphatic diacyl peroxides for use herein are dilauroyl peroxide, didecanoyl peroxide, dimyristoyl peroxide, or mixtures thereof. A suitable aromatic diacyl peroxide for use herein is for example benzoyl peroxide. A suitable aliphatic-aromatic diacyl peroxide for use herein is for example lauroyl benzoyl peroxide.

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Suitable organic or inorganic peracids for use herein include : persulfates such as monopersulfate; peroxyacids such as diperoxydodecandioic acid (DPDA);

magnesium perphthalic acid; perlaunic acid; phthaloyl amidoperoxy caproic acid (PAP); perbenzoic and alkylperbenzoic acids; and mixtures thereof.

Suitable hydroperoxides for use herein are tert-butyl hydroperoxide, cumyl hydroperoxide, 2,4,4-trimethylpentyl-2-hydroperoxide, di-isopropylbenzene-monohydroperoxide, tert-amyl hydroperoxide and 2,5-dimethyl-hexane-2,5-dihydroperoxide and mixtures thereof. Such hydroperoxides have the advantage of being particularly safe to fabrics and color while delivering excellent bleaching performance when used in any laundry application. Furthermore, such hydroperoxides have the advantage of being particularly safe to carpets and carpet dyes whilst delivering excellent bleaching performance when used in carpet treatment applications.

A preferred peroxygen bleach herein is selected from the group consisting of : hydrogen peroxide; water-soluble sources of hydrogen peroxide; organic or inorganic peracids; hydroperoxides; and diacyl peroxides; and mixtures thereof. A more preferred peroxygen bleach herein is selected from the group consisting of hydrogen peroxide, water-soluble sources of hydrogen peroxide and diacyl peroxides and mixtures thereof. An even more preferred peroxygen bleach herein is selected from the group consisting of hydrogen peroxide, water soluble sources of hydrogen peroxide, aliphatic diacyl peroxides, aromatic diacyl peroxides and aliphatic-aromatic diacyl peroxides and mixtures thereof. The most preferred peroxygen bleach herein is hydrogen peroxide, water-soluble sources of hydrogen peroxide or mixtures thereof.

The liquid compositions according to the present invention comprise at least 3% by weight of the total composition of said peroxygen bleach. Preferably, the bleaching composition herein may comprise from 3% to 30%, preferably from 4% to 20%, more preferably from 4.5% to 15%, even more preferably from 5% to 10%, and most preferably from 5.5% to 10% by weight of the total composition of said peroxygen bleach.

The presence of a peroxygen bleach in bleaching compositions according to the present invention contributes to the excellent bleaching and/or cleaning performance on various types of soils including on spot stains like bleachable stains (e.g., coffee, beverage, food) of the compositions of the present invention.

Furthermore, peroxygen bleaches are chosen herein as oxidising agents over other oxidising agents, as for example hypochlorite bleaches, as they are considered as being safer to fabrics, specifically to coloured fabrics.

- 5 By "bleachable stains" it is meant herein any soils or stains containing ingredients sensitive to bleach that can be found on any carpet, e.g., coffee or tea.

#### The container

- 10 The article of manufacture according to the present invention comprises a container. Said container contains the liquid bleaching compositions herein. The liquid bleaching composition herein may be packaged in a variety of suitable detergent containers known to those skilled in the art.

- 15 Suitable containers herein are selected from the group consisting of plastic bottles, glass bottles and the like. Suitable plastic bottles are made of synthetic organic polymeric plastic materials.

- In a preferred embodiment according to the present invention, the container  
20 herein is a plastic bottle.

#### Set of instructions

- The article of manufacture according to the present invention comprises a set of  
25 instructions, preferably usage instructions for the liquid bleaching composition herein, wherein said set of instructions comprises instructions to contact dark colored fabric items with said liquid bleaching composition in its neat or diluted form and wash said dark colored fabric items in an aqueous bath comprising water and a conventional laundry detergent before and/or during and/or after the  
30 step of contacting said dark colored fabric items with said liquid bleaching composition.

- By 'dark colored fabric items' it is meant herein, any kind of fabric item having a dark color, wherein said dark color is provided to said fabric item by any means  
35 known to those skilled in the art. Preferably, said dark colored fabric items are fabric items dyed with fabric dyes providing a dark color to said fabric item.



By 'dark color' it is meant herein a color having a luminosity dimension  $L^*$  (CIE  $L^*a^*b^*$  color model) of from 35 to 0, preferably 25 to 0, more preferably, 15 to 0. Examples of such dark colors include, but are not limited to, black, dark brown, anthracite, dark gray, dark blue, dark green and the like.

The 'luminosity dimension  $L^*$ ' defines the lightness or grayscale axis of a color on a scale ranging from 0 (black) to 100 (white). The Luminosity dimension  $L^*$  is defined in the CIE  $L^*a^*b^*$  color model (CIELAB), published in 1976 by the Commission Internationale de l'Éclairage (CIE) or International Commission on Illumination (ICC). The luminosity dimension  $L^*$  is closely related to the lightness or value of a color as defined in the Munsell's value axis (Munsell scale), ranging from 1 to 10, except that the value of each step is much greater.

By 'fabric item' it is meant herein any kind of textile item made of natural (such as cotton or wool and the like) and/or synthetic (such as polyester, nylon, lycra and the like) material. Suitable fabric items herein include, but are not limited to : clothes, such as shirts, trousers, skirts, underwear, sweaters, jackets, coats and the like; house textiles, such as bath linens, bed linens, kitchen cloths, tablecloths, handkerchiefs, napkins and the like; curtains; drapes; sleeping bags; tents etc..

Suitable dark colored fabric items herein are colored by a single dark color as described herein above, or are colored by any kind of pattern or design composed of a multitude of dark colors as described herein above or a pattern or design composed of a mixture of at least one dark color as described herein above and at least one light color, wherein said dark color or dark colors constitute at least 50%, preferably 60%, more preferably 75%, of the total surface area of said pattern or design.

By 'light color' it is meant herein, a color having an  $L^*$  value outside of the range as defined herein for dark color.

In a preferred embodiment according to the present invention said dark colored fabric items are colored by a color having a luminosity dimension  $L^*$  (CIE  $L^*a^*b^*$  color model) of from 35 to 0, preferably 25 to 0, more preferably 15 to 0. Most

preferably, said dark colored fabric items are colored by a color having a luminosity dimension  $L^*$  (CIE  $L^*a^*b^*$  color model) of 0, which is black.

- 5 In another preferred embodiment according to the present invention, said dark colored fabric items are black or have a pattern or design composed of a mixture of black and other colors, wherein at least 50%, preferably 60%, more preferably 75%, of the total surface area of said pattern or design is black.

- 10 The usage instructions herein may be printed directly onto the container herein and/or onto an additional package for the container herein (such as a carton or plastic box) when present. Furthermore, said usage instructions may be associated to said container and/or to said optional additional package by means of a label comprising the instructions in a printed manner applied to the container and/or said optional additional package. Said label may be glued or by any other  
15 means known to those skilled in the art affixed or attached to the container and/or said additional package when present. Moreover, said usage instructions may be presented with the article of manufacture in a separate manner, including but not limited to, a brochure, print advertisement, electronic advertisement, and/or verbal communication.

- 20 In a preferred embodiment herein, the article of manufacture herein may in addition to the usage instructions bear an additional indication comprising a term selected from the group consisting of : noir, black, bleach for blacks, bleach noir, dark bleach, bleach for darks, bleach dark colors, bleach for black colors, for  
25 black fabrics, for dark fabrics, negro, nero, preto, schwarz, dark, oscuro, escuro, scuro, and the like, and combinations thereof. Preferably, said additional indication comprises a term selected from the group consisting of : noir, black, dark, bleach for blacks, bleach noir, dark bleach, bleach for darks and the like, and combinations thereof. More preferably, said additional indication comprises a  
30 term selected from the group consisting of : noir, black, dark, and the like, and combinations thereof. Said additional indication further specifies that the liquid bleaching composition herein is suitable for the treatment of dark colored fabric items. Preferably, said additional indication herein is printed directly onto the container herein and/or onto an additional package for the container herein (such  
35 as a carton or plastic box) when present. Furthermore, said additional indication herein may be associated to said container and/or to said optional additional

- package by means of a label comprising the instructions in a printed manner applied to the container and/or said optional additional package. Said label may be glued or by any other means known to those skilled in the art affixed or attached to the container and/or said additional package when present.
- 5 Moreover, said additional indication herein may be presented with the article of manufacture in a separate manner, including but not limited to, a brochure, print advertisement, electronic advertisement, and/or verbal communication.

- The usage instructions herein comprise instructions to use the bleaching composition of the present invention by contacting dark colored fabric items with a liquid bleaching composition. By "in a liquid form" it is meant herein, the liquid compositions according to the present invention per se in neat or diluted form.
- 10

- Depending on the concentration of the peroxygen bleach in the liquid bleaching composition, the set of instructions preferably comprises an instruction to direct the user to apply to the dark colored fabric items an effective amount of the liquid bleaching composition, in order to provide an effective level of the peroxygen bleach to said fabric items to achieve the desired benefit.
- 15

- The compositions according to the present invention are typically used in diluted form in a laundry operation. By "in diluted form" it is meant herein that the compositions for the bleaching of fabrics according to the present invention may be diluted by the user, preferably with water. Such dilution may occur for instance in soaking applications as well as by other means such as in a washing machine.
- 20
- Said compositions may be used at a dilution level of up to 1500:1 (solvent:composition), preferably from 5:1 to 1000:1 and more preferably from 10:1 to 700:1 (solvent:composition).
- 25

- Typically an effective amount of liquid bleaching composition in diluted condition is an amount that provides from 1 to 15 grams, preferably from 2 to 10, and more preferably from 2.5 to 5 grams of peroxygen bleach per kilogram of dry fabric.
- 30

- By "in its neat form", it is to be understood that the liquid bleaching compositions are applied directly onto the fabrics to be treated without undergoing any dilution, i.e., the liquid compositions herein are applied onto the fabrics as described herein.
- 35

Typically an effective amount of liquid bleaching composition in neat condition is an amount that provides from 25 to 100 grams, preferably from 30 to 75, and more preferably from 40 to 60 grams of peroxygen bleach per kilogram of dry fabric.

By "treating a fabric", it is meant herein cleaning said and/or bleaching/disinfecting said fabric.

- 10 In the process of treating (e.g., cleaning and/or bleaching) a fabric, a bleaching composition according to the present invention is contacted with the fabrics to be treated.

This can be done either in a so-called "pretreatment mode", where a liquid bleaching composition, as defined herein, is applied neat onto said fabrics before the fabrics are washed or in a "soaking mode" where a liquid bleaching composition, as defined herein, is first diluted in an aqueous bath and the fabrics are immersed and soaked in the bath, before they are washed, or in a "through-the-wash mode", where a liquid bleaching composition, as defined herein, is added in addition to a wash liquor formed by dissolution or dispersion of a conventional laundry detergent, preferably in a washing machine.

More specifically, the pretreatment process of bleaching fabrics according to the present invention preferably comprises the steps of first contacting said fabrics with a bleaching composition according to the present invention, then allowing said fabrics to remain in contact with said composition, for a period of time sufficient to bleach said fabrics, then rinsing said fabrics with water before being washed.

30 The bleaching composition may be used in dilute or neat form. Where it is used diluted, the bleaching composition should remain in contact with the fabric for typically 1 to 60 minutes, preferably 5 to 30 minutes. Whereas, when the bleaching composition is used in its neat form, it should remain in contact with the fabric for a much shorter time, typically 5 seconds to 30 minutes, preferably 1 minute to 10 minutes.

In the process herein, said fabrics are to be washed, i.e., treated with a conventional laundry detergent, preferably comprising at least one surface active agent, the washing of said fabrics with a conventional laundry detergent may be conducted before the step of contacting said fabrics with said bleaching composition and/or during the step of contacting fabrics are contacted with said bleaching composition and/or after the step where said fabrics are contacted with the bleaching composition.

In a preferred embodiment, the washing of said fabrics with a conventional laundry detergent is conducted before the step of contacting said fabrics with said bleaching composition and/or during the step of contacting fabrics are contacted with said bleaching composition. More preferably, the washing of said fabrics with a conventional laundry detergent is conducted before the step of contacting said fabrics with said bleaching composition. Indeed, it has been observed that bleaching said fabrics with the compositions according to the present invention (diluted and/or neat bleaching processes) prior to washing them with a detergent composition provides superior whiteness and stain removal with less energy and detergent than if said fabrics are washed first, then bleached.

In a preferred embodiment according to the present invention, the conventional laundry detergent as described herein are dissolved or dispersed, preferably substantially dissolved or dispersed, in the aqueous bath formed in the process according to the present invention. By "substantially dissolved or dispersed" it is meant herein, that at least 50%, preferably at least 80%, more preferably at least 90%, even more preferably at least 95%, still more preferably at least 98%, and most preferably at least 99%, of said conventional laundry detergent are dissolved or dispersed in the aqueous bath formed in the process according to the present invention.

In a preferred embodiment, the washing step according to the present invention is performed in a washing machine. The conventional detergent composition may be delivered into the washing machine either by charging the dispenser drawer of the washing machine with the detergent or by directly charging the drum of the washing machine with the detergent.

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By "conventional laundry detergent" it is meant herein, a laundry detergent composition currently available on the market. Preferably, said conventional laundry detergent comprises at least one surface active agent ("surfactant" as described herein below). Said laundry detergent compositions may be formulated  
5 as powders, liquids or tablets. Suitable laundry detergent compositions are for example DASH futur®, DASH essential®, DASH liquid®, ARIEL tablets® and other products sold under the trade names ARIEL® or TIDE®.

Preferably, the instructions concerning the use of the liquid bleach composition  
10 are in consumer-friendly language on packaging and/or in advertising (e.g., leaflets, coupons, displays, etc.). By 'consumer-friendly language', it is meant that consumers would be instructed how to use the product to achieve the best results. It is important that the instructions are as simple and clear as possible and it is envisioned that pictures, drawings and/or icons can be used, either with  
15 or without words to render the instructions more consumer-friendly. The set of instructions can be multi-lingual to be more easily understood by consumers who speak different languages. Special packaging design can also be advantageously used to convey instructions in a consumer-friendly fashion.

The units of measurement provided to consumers will reflect consumer understanding, e.g., English dosing units will be preferred in, e.g., the United States and the United Kingdom, and metric units will be used in, e.g., most European nations. Although all of the compositions and methods described  
20 herein are written in metric units, it is understood that these units will be converted into consumer-friendly language instructions in the actual product packaging, advertising etc. Furthermore, the effective levels needed of the essential and optional actives are expressed herein as the amounts of the actives per weight of fabrics, the instructions for use to the consumer will be expressed  
25 as amount per use of the liquid bleach composition, when a preferred composition is set.

Peroxygen bleach-containing compositions in laundry applications are known to boost the removal of dried on (encrusted) stains/soils and "problem" stains, such as grease, coffee, tea, grass, mud/clay-containing soils, which are otherwise  
35 particularly difficult to remove. In addition, peroxygen bleaches are safe to

fabrics, specifically to dark colored fabric items, in particular when compared to other bleaches, as for example hypohalite bleaches.

- Nevertheless, peroxygen bleaching compositions are mistakenly considered by the users of such compositions as having the tendency of damaging dark colored fabric items treated therewith. Indeed, the users of said compositions consider said compositions to cause color damage ("discoloration") of dyed fabric items treated with said compositions, in particular dark colored fabric items.
- It has been found that bleaching compositions comprising a peroxygen bleach show an excellent color safety performance. Indeed, such bleaching compositions show an excellent color safety performance when used on dark colored fabric items and even on black fabric items.
- Moreover, it has been observed that bleaching compositions comprising a peroxygen bleach reduce or even prevent color bleeding when used to treat colored fabric items. Indeed, the dyes of dark colored fabric items when contacted with aqueous compositions, such as a laundry wash solution formed by water and a conventional laundry detergent, have the tendency to dissolve of the fabric and go in solution. It has been observed that such solubilised dyes tend to deposit themselves on other parts of the fabric items treated and therefore change the coloration of said fabric items. This effect is known as 'color bleeding'. Without being bound by theory, it has now been found that the peroxygen bleach herein is capable of neutralizing/dyscoloring, i.e., bleaching, such dissolved fabric dyes in situ, i.e., in the laundry wash solution. Thereby, the color bleeding is significantly reduced or even prevented in case a liquid bleaching composition forming part of the article of manufacture as described herein is used as directed by the set of instructions as described herein.
- Hence, it is not just that the bleaching compositions herein do not show a negative effect regarding color safety when treating dark colored fabric items but there is even the beneficial effect of color bleeding reduction or even prevention when treating dark colored fabric items.
- A set of instructions as described herein is essential to obtaining the benefits of the present invention because users of bleaching compositions comprising a

peroxygen bleach are unaware of the benefits provided as described herein. More specifically, such used are not aware that the use of said liquid bleach composition can safely and effectively bleach and/or remove stain from colored fabric, including dark and/or black colored fabric, without causing damage or significantly reducing the damage to the color of said colored fabric. As such, a set of Instructions provided in association with the liquid bleach composition is essential for the consumer to enjoy the benefits of the present invention.

A further advantage of process herein is the cleaning performance. In fact, the cleaning performance benefits of the combination of both the liquid bleaching composition and the conventional laundry detergent is greater than the performance provided by either composition alone.

#### Method of instructing the public

The present invention further encompasses a method of instructing the public by providing to the public a set of instructions for use of an article of manufacture comprising a container; and a liquid bleaching composition comprising a peroxygen bleach; wherein said set of instructions comprises instructions to contact dark colored fabric items with said liquid bleaching composition in its neat or diluted form and wash said dark colored fabric items in an aqueous bath comprising water and a conventional laundry detergent before and/or during and/or after the step of contacting said dark colored fabric items with said liquid bleaching composition.

Preferably, the term 'the public' has to be interpreted in a way to mean an unconfined or unrestricted group or mass of people forming at least part of the whole population of a country or a state or a city as opposed to the confined circle of people defined by one person's family or friends. In a preferred embodiment herein, the method herein is directed at instructing the bleach-using part of the public as defined herein. By 'bleach-using part of the public' it is meant herein that part of the population of a country or a state or a city that usually uses a bleaching composition in their laundry washing operations.



In a preferred embodiment herein, the method of instructing the public according to the present invention relates to safely treating dark colored fabric items with a liquid bleaching composition comprising a peroxygen bleach.

- 5 Preferably, the instructions to be provided to the public are as described herein above for the usage Instructions of the article of manufacture according to the present invention.

- 10 In another preferred embodiment herein, the method of instructing the public according to the present invention relates to teaching a consumer to bleach and/or remove stain from colored fabric without causing damage or minimizing damage to the color of said colored fabric. The consumer is informed of the benefit associated with the use of the liquid bleach composition through a set of instructions associated with the liquid bleach composition or with fabric articles.
- 15 The set of instructions useful for informing the consumer are those described herein in association with the articles and/or methods of the present invention.

- The set of instructions associated with the use and/or benefits of the article of manufacture of the present invention can be provided via different means using a variety of media. As an alternative to providing the set of instructions as part of the article of manufacture as described herein above, the set of instructions can be provided to the public on an information sheet provided with the package and/or on point of sale materials. Similarly, the set of instructions can be recorded in various electronic or computer readable forms and provided with the composition package.
- 20
- 25

- It is also preferred to provide the instructions associated with the use and/or benefits of article of manufacture of the present invention via the mass media, such as the print media and/or the electronic media. Print media include, e.g., newspapers, magazines, journals, newsletters, brochures, billboard presentations, store displays, and the like, in, e.g., hard copy, or virtual, electronic format. Electronic media include means to communicate via electronic means and/or electromagnetic radiation, e.g., television, radio, global computer network, and the like. Electronic or computer readable forms can be posted and made available to the consumer for downloading from a website located on a global
- 30
- 35

computer network. It is also preferred that the set of instructions is posted at the point of sale adjacent the package.

#### Method of Promoting the Use of Liquid Bleach Compositions

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The present invention further encompasses a method of promoting the use of a liquid bleaching composition comprising peroxygen bleach to safely bleach and/or remove stain from colored fabric comprising dark and/or black colored fabric, the method comprising the step of informing the public that the treatment of dark and/or black colored fabric with said composition reduces and/or prevents damage to the color of said fabric.

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The step of informing the public can be performed as described herein above in the section titled 'Method of instructing the public'.

15

#### Optional ingredients of the bleaching composition

The bleaching compositions herein may further comprise a variety of optional ingredients such as dye maintenance agents, surfactants, thickeners, builders, chelating agents, stabilisers, bleach activators, soil suspenders, soil suspending polyamine polymers, polymeric soil release agents, foam reducing systems or agents, catalysts, dye transfer agents, brighteners, perfumes, hydrotropes, solvents, pigments and dyes.

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#### Dye maintenance agent

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As an optional but highly preferred ingredient the compositions according to the present invention comprise a dye maintenance agent.

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Any dye maintenance agent known to those skilled in the art are suitable for use herein.

Suitable dye maintenance agents are described in WO 99/14299, WO 99/14300, WO 99/14301, WO 99/14297, WO 00/22078 and WO 00/56849 all documents being incorporated herein by reference.

35

Typically, the bleaching compositions according to the present invention may comprise from 0.001% to 30%, preferably from 0.01 % to 15% and more preferably from 0.05% to 5% by weight of the total composition of a dye maintenance agent.

5

In a preferred embodiment according to the present invention, the dye maintenance agent herein is imidazole : epi-chlorohydrin copolymer (condensation oligomer of imidazole and epi-chlorohydrin at a ratio of 1:4:1).

- 10 A suitable imidazole : epi-chlorohydrin copolymer dye maintenance agent is commercially available under the trade name Sokalan PG-IME® from BASF.

The dye maintenance agents when present in the bleaching compositions as described herein provide an active color protection benefit.

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By "active color protection" it is meant herein the active protection of dyed fabrics against discoloration caused by the interaction of a wash solution formed by a conventional laundry detergent and the fabric dyes ("color protection benefit").

- 20 Indeed, it has been observed that dye maintenance agents specifically adhere to dye molecules deposited on fabrics, preferably sulphate groups of dye molecules, and thereby reduce the solubility of said dye molecules. Thereby, protecting said dyes from solubilising them off the fabric and thereby discoloring said fabric caused by the interaction of the wash solution formed by a conventional laundry  
25 detergent used in addition to the bleaching composition and the dye.

#### Surfactants

The compositions according to the present invention may comprise as a highly preferred but optional ingredient a surfactant.

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Typically, the compositions according to the present invention may comprise from 0.01% to 30%, preferably from 0.1% to 25 % and more preferably from 0.5% to 20% by weight of the total composition of a surfactant.

- 35 Suitable nonionic surfactants include alkoxylated nonionic surfactants. Preferred alkoxylated nonionic surfactants herein are ethoxylated nonionic surfactants

according to the formula  $RO-(C_2H_4O)_nH$ , wherein R is a  $C_6$  to  $C_{22}$  alkyl chain or a  $C_6$  to  $C_{28}$  alkyl benzene chain, and wherein n is from 0 to 20, preferably from 1 to 15 and, more preferably from 2 to 15 and most preferably from 2 to 12. The preferred R chains for use herein are the  $C_8$  to  $C_{22}$  alkyl chains. Propoxylated

- 5 nonionic surfactants and ethoxy/propoxylated ones may also be used herein instead of the ethoxylated nonionic surfactants as defined herein above or together with said surfactants

- Preferred ethoxylated nonionic surfactants are substantially linear ethoxylated  
10 nonionic surfactants according to the above formula. By "linear" it is meant herein that the fatty alcohols used as a basis of the nonionic surfactant (raw material) at least 90%, preferably at least 95%, more preferably at least 97%, and most preferably 100% by weight of the total amount of fatty alcohols of linear (i.e., straight chain) fatty alcohols.

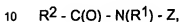
- 15 Suitable substantially linear ethoxylated nonionic surfactants for use herein are Marlipal® 24-7 (R is a mixture of linear  $C_{12}$  and  $C_{14}$  alkyl chains, n is 7), Marlipal® 24-4 (R is a mixture of linear  $C_{12}$  and  $C_{14}$  alkyl chains, n is 4), Marlipal® 24-3 (R is a mixture of linear  $C_{12}$  and  $C_{14}$  alkyl chains, n is 3),  
20 Marlipal® 24-2 (R is a mixture of linear  $C_{12}$  and  $C_{14}$  alkyl chains, n is 2), or mixtures thereof. Preferred herein are Marlipal® 24-7, Marlipal® 24-4, or mixtures thereof. These Marlipal® surfactants are commercially available from Condea.

- Preferred ethoxylated nonionic surfactants are according to the formula above  
25 and have an HLB (hydrophilic-lipophilic balance) below 16, preferably below 15, and more preferably below 14. Those ethoxylated nonionic surfactants have been found to provide good grease cutting properties.

- Accordingly suitable ethoxylated nonionic surfactants for use herein are  
30 Dobanol® or Lutensol® ethoxylated nonionic surfactant series. Preferred herein are Dobanol® 91-2.5, or Lutensol® TO3, or Lutensol® AO3, or Tergitol® 25L3, or Dobanol® 23-3, or Dobanol® 23-2, or Dobanol® 45-7, Dobanol® 91-8, or Dobanol® 91-10, or Dobanol® 91-12, or mixtures thereof. These Dobanol® surfactants are commercially available from SHELL. These Lutensol® surfactants  
35 are commercially available from BASF and these Tergitol® surfactants are commercially available from UNION CARBIDE.

Suitable chemical processes for preparing the alkoxyated nonionic surfactants for use herein include condensation of corresponding alcohols with alkylene oxide, in the desired proportions. Such processes are well known to the man skilled in the art and have been extensively described in the art.

Other suitable nonionic surfactants to be used herein include polyhydroxy fatty acid amide surfactants, or mixtures thereof, according to the formula:



wherein  $R^1$  is H, or  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  hydrocarbyl, 2-hydroxy ethyl, 2-hydroxy propyl or a mixture thereof,  $R^2$  is  $C_5$ - $C_{31}$  hydrocarbyl, and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or an alkoxyated derivative thereof.

Preferably,  $R^1$  is  $C_1$ - $C_4$  alkyl, more preferably  $C_1$  or  $C_2$  alkyl and most preferably methyl,  $R^2$  is a straight chain  $C_7$ - $C_{19}$  alkyl or alkenyl, preferably a straight chain  $C_9$ - $C_{18}$  alkyl or alkenyl, more preferably a straight chain  $C_{11}$ - $C_{18}$  alkyl or alkenyl, and most preferably a straight chain  $C_{11}$ - $C_{14}$  alkyl or alkenyl, or mixtures thereof. Z preferably will be derived from a reducing sugar in a reductive amination reaction; more preferably Z is a glycityl. Suitable reducing sugars include glucose, fructose, maltose, lactose, galactose, mannose and xylose. As raw materials, high dextrose corn syrup, high fructose corn syrup, and high maltose corn syrup can be utilized as well as the individual sugars listed above. These corn syrups may yield a mix of sugar components for Z. It should be understood that it is by no means intended to exclude other suitable raw materials. Z preferably will be selected from the group consisting of  $-CH_2-(CHOH)_n-CH_2OH$ ,  $-CH(CH_2OH)-(CHOH)_{n-1}-CH_2OH$ ,  $-CH_2-(CHOH)_2-(CHOR')(CHOH)-CH_2OH$ , where n is an Integer from 3 to 5, inclusive, and  $R'$  is H or a cyclic or aliphatic monosaccharide, and alkoxyated derivatives thereof. Most preferred are glycityls wherein n is 4, particularly  $CH_2-(CHOH)_4-CH_2OH$ .

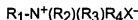
In formula  $R^2 - C(O) - N(R^1) - Z$ ,  $R^1$  can be, for example, N-methyl, N-ethyl, N-propyl, N-isopropyl, N-butyl, N-2-hydroxy ethyl, or N-2-hydroxy propyl.  $R^2 - C(O) - N<$  can be, for example, cocamide, stearamide, oleamide, lauramide,

myristamide, capricamide, palmitamide, tallowamide and the like. Z can be 1-deoxyglucityl, 2-deoxyfructityl, 1-deoxymaltityl, 1-deoxylactityl, 1-deoxygalactityl, 1-deoxymannityl, 1-deoxymaltotriosityl and the like.

- 5 Suitable polyhydroxy fatty acid amide surfactants to be used herein may be commercially available under the trade name HOE® from Hoechst.

Methods for making polyhydroxy fatty acid amide surfactants are known in the art. In general, they can be made by reacting an alkyl amine with a reducing  
10 sugar in a reductive amination reaction to form a corresponding N-alkyl polyhydroxyamine, and then reacting the N-alkyl polyhydroxyamine with a fatty aliphatic ester or triglyceride in a condensation/amidation step to form the N-alkyl, N-polyhydroxy fatty acid amide product. Processes for making compositions containing polyhydroxy fatty acid amides are disclosed for example in GB patent specification 809,060, published February 18, 1959, by Thomas Hedley & Co.,  
15 Ltd., US patent 2,965,576, issued December 20, 1960 to E.R. Wilson, US patent 2,703,798, Anthony M. Schwartz, issued March 8, 1955, US patent 1,985,424, issued December 25, 1934 to Piggott and WO92/06070, each of which is incorporated herein by reference.

- 20 Suitable zwitterionic betaine surfactants for use herein contain both a cationic hydrophilic group, i.e., a quaternary ammonium group, and anionic hydrophilic group on the same molecule at a relatively wide range of pH's. The typical anionic hydrophilic groups are carboxylates and sulphonates, although other  
25 groups like sulfates, phosphonates, and the like can be used. A generic formula for the zwitterionic betaine surfactant to be used herein is :



- 30 wherein  $R_1$  is a hydrophobic group;  $R_2$  is hydrogen,  $C_1$ - $C_6$  alkyl, hydroxy alkyl or other substituted  $C_1$ - $C_6$  alkyl group;  $R_3$  is  $C_1$ - $C_6$  alkyl, hydroxy alkyl or other substituted  $C_1$ - $C_6$  alkyl group which can also be joined to  $R_2$  to form ring structures with the N, or a  $C_1$ - $C_6$  sulphonate group;  $R_4$  is a moiety joining the cationic nitrogen atom to the hydrophilic group and is typically an alkylene,  
35 hydroxy alkylene, or polyalkoxy group containing from 1 to 10 carbon atoms; and X is the hydrophilic group, which is a carboxylate or sulphonate group.

- Preferred hydrophobic groups  $R_1$  are aliphatic or aromatic, saturated or unsaturated, substituted or unsubstituted hydrocarbon chains that can contain linking groups such as amido groups, ester groups. More preferred  $R_1$  is an alkyl
- 5 group containing from 1 to 24 carbon atoms, preferably from 8 to 18, and more preferably from 10 to 16. These simple alkyl groups are preferred for cost and stability reasons. However, the hydrophobic group  $R_1$  can also be an amido radical of the formula  $R_a-C(O)-NH-(C(R_b)_2)_m$ , wherein  $R_a$  is an aliphatic or aromatic, saturated or unsaturated, substituted or unsubstituted hydrocarbon
- 10 chain, preferably an alkyl group containing from 8 up to 20 carbon atoms, preferably up to 18, more preferably up to 16,  $R_b$  is selected from the group consisting of hydrogen and hydroxy groups, and  $m$  is from 1 to 4, preferably from 2 to 3, more preferably 3, with no more than one hydroxy group in any  $(C(R_b)_2)$  moiety.
- 15 Preferred  $R_2$  is hydrogen, or a  $C_1$ - $C_3$  alkyl and more preferably methyl. Preferred  $R_3$  is  $C_1$ - $C_4$  sulphonate group, or a  $C_1$ - $C_3$  alkyl and more preferably methyl. Preferred  $R_4$  is  $(CH_2)_n$  wherein  $n$  is an integer from 1 to 10, preferably from 1 to 6, more preferably is from 1 to 3.
- 20 Some common examples of betaine/sulphobetaine are described in U.S. Pat. Nos. 2,082,275, 2,702,279 and 2,255,082, incorporated herein by reference.
- Examples of particularly suitable alkyldimethyl betaines include coconut-dimethyl
- 25 betaine, lauryl dimethyl betaine, decyl dimethyl betaine, 2-(N-decyl-N, N-dimethylammonia) acetate, 2-(N-coco N, N-dimethylammonio) acetate, myristyl dimethyl betaine, palmityl dimethyl betaine, cetyl dimethyl betaine, stearyl dimethyl betaine. For example Coconut dimethyl betaine is commercially available from Seppic under the trade name of Amonyl 265®. Lauryl betaine is commercially
- 30 available from Albright & Wilson under the trade name Empigen BB/L®.
- Examples of amidobetaines include cocoamidoethylbetaine, cocoamidopropyl betaine or  $C_{10}$ - $C_{14}$  fatty acylamidopropylene (hydropropylene)sulfo betaine. For example  $C_{10}$ - $C_{14}$  fatty acylamidopropylene (hydropropylene) sulfo betaine is
- 35 commercially available from Sherex Company under the trade name "Varion CAS ® sulfo betaine".

A further example of betaine is Lauryl-immino-dipropionate commercially available from Rhone-Poulenc under the trade name Mirataine H<sub>2</sub>C-HA®.

- 5 Suitable anionic surfactants to be used in the compositions herein include water-soluble salts or acids of the formula  $\text{ROSO}_3\text{M}$  wherein R preferably is a C<sub>10</sub>-C<sub>24</sub> hydrocarbyl, preferably an alkyl or hydroxyalkyl having a C<sub>10</sub>-C<sub>20</sub> alkyl component, more preferably a C<sub>12</sub>-C<sub>18</sub> alkyl or hydroxyalkyl, and M is H or a cation, e.g., an alkali metal cation (e.g., sodium, potassium, lithium), or
- 10 ammonium or substituted ammonium (e.g., methyl-, dimethyl-, and trimethyl ammonium cations and quaternary ammonium cations, such as tetramethyl-ammonium and dimethyl piperdinium cations and quaternary ammonium cations derived from alkylamines such as ethylamine, diethylamine, triethylamine, and mixtures thereof, and the like). Typically, alkyl chains of C<sub>12</sub>-16 are preferred for
- 15 lower wash temperatures (e.g., below 50°C) and C<sub>16</sub>-18 alkyl chains are preferred for higher wash temperatures (e.g., above 50°C).

- Other suitable anionic surfactants for use herein are water-soluble salts or acids of the formula  $\text{RO(A)}_m\text{SO}_3\text{M}$  wherein R is an unsubstituted C<sub>10</sub>-C<sub>24</sub> alkyl or
- 20 hydroxyalkyl group having a C<sub>10</sub>-C<sub>24</sub> alkyl component, preferably a C<sub>12</sub>-C<sub>20</sub> alkyl or hydroxyalkyl, more preferably C<sub>12</sub>-C<sub>18</sub> alkyl or hydroxyalkyl, A is an ethoxy or propoxy unit, m is greater than zero, typically between 0.5 and 6, more preferably between 0.5 and 3, and M is H or a cation which can be, for example, a metal cation (e.g., sodium, potassium, lithium, calcium, magnesium, etc.),
- 25 ammonium or substituted-ammonium cation. Alkyl ethoxylated sulfates as well as alkyl propoxylated sulfates are contemplated herein. Specific examples of substituted ammonium cations include methyl-, dimethyl-, trimethyl-ammonium and quaternary ammonium cations, such as tetramethyl-ammonium, dimethyl piperdinium and cations derived from alkanolamines such as ethylamine,
- 30 diethylamine, triethylamine, mixtures thereof, and the like. Exemplary surfactants are C<sub>12</sub>-C<sub>18</sub> alkyl polyethoxylate (1.0) sulfate (C<sub>12</sub>-C<sub>18</sub>E(1.0)SM), C<sub>12</sub>-C<sub>18</sub> alkyl polyethoxylate (2.25) sulfate (C<sub>12</sub>-C<sub>18</sub>E(2.25)SM), C<sub>12</sub>-C<sub>18</sub> alkyl polyethoxylate (3.0) sulfate (C<sub>12</sub>-C<sub>18</sub>E(3.0)SM), and C<sub>12</sub>-C<sub>18</sub> alkyl polyethoxylate (4.0) sulfate (C<sub>12</sub>-C<sub>18</sub>E(4.0)SM), wherein M is conveniently
- 35 selected from sodium and potassium.



Other suitable anionic surfactants for use herein are sulphonated anionic surfactants. Suitable sulphonated anionic surfactants for use herein include alkyl sulphonates, alkyl aryl sulphonates, naphthalene sulphonates, alkyl alkoxyated sulphonates, C<sub>6</sub>-C<sub>20</sub> alkyl alkoxyated linear or branched diphenyl oxide  
5 disulphonates, or mixtures thereof.

Suitable alkyl sulphonates for use herein include water-soluble salts or acids of the formula RSO<sub>3</sub>M wherein R is a C<sub>6</sub>-C<sub>20</sub> linear or branched, saturated or unsaturated alkyl group, preferably a C<sub>8</sub>-C<sub>18</sub> alkyl group and more preferably a  
10 C<sub>14</sub>-C<sub>17</sub> alkyl group, and M is H or a cation, e.g., an alkali metal cation (e.g., sodium, potassium, lithium), or ammonium or substituted ammonium (e.g., methyl-, dimethyl-, and trimethyl ammonium cations and quaternary ammonium cations, such as tetramethyl-ammonium and dimethyl piperdinium cations and quaternary ammonium cations derived from alkylamines such as ethylamine,  
15 diethylamine, triethylamine, and mixtures thereof, and the like).

Suitable alkyl aryl sulphonates for use herein include water-soluble salts or acids of the formula RSO<sub>3</sub>M wherein R is an aryl, preferably a benzyl, substituted by a C<sub>6</sub>-C<sub>20</sub> linear or branched saturated or unsaturated alkyl group, preferably a C<sub>8</sub>-  
20 C<sub>18</sub> alkyl group and more preferably a C<sub>10</sub>-C<sub>16</sub> alkyl group, and M is H or a cation, e.g., an alkali metal cation (e.g., sodium, potassium, lithium, calcium, magnesium and the like) or ammonium or substituted ammonium (e.g., methyl-, dimethyl-, and trimethyl ammonium cations and quaternary ammonium cations, such as tetramethyl-ammonium and dimethyl piperdinium cations and quaternary  
25 ammonium cations derived from alkylamines such as ethylamine, diethylamine, triethylamine, and mixtures thereof, and the like).

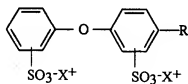
Particularly suitable linear alkyl sulphonates include C<sub>14</sub>-C<sub>17</sub> paraffin sulphonate like Hostapur ® SAS commercially available from Hoechst. An example of  
30 commercially available alkyl aryl sulphonate is Lauryl aryl sulphonate from Su.Ma. Particularly preferred alkyl aryl sulphonates are alkyl benzene sulphonates commercially available under trade name Nansa® available from Albright&Wilson.

35 By "linear alkyl sulphonate" it is meant herein a non-substituted alkyl sulphonate wherein the alkyl chain comprises from 6 to 20 carbon atoms, preferably from 8

to 18 carbon atoms, and more preferably from 14 to 17 carbon atoms, and wherein this alkyl chain is sulphonated at one terminus.

Suitable alkoxyated sulphonate surfactants for use herein are according to the formula  $R(A)_mSO_3M$  wherein R is an unsubstituted  $C_6-C_{20}$  alkyl, hydroxyalkyl or alkyl aryl group, having a linear or branched  $C_6-C_{20}$  alkyl component, preferably a  $C_{12}-C_{20}$  alkyl or hydroxyalkyl, more preferably  $C_{12}-C_{18}$  alkyl or hydroxyalkyl, A is an ethoxy or propoxy or butoxy unit, m is greater than zero, typically between 0.5 and 6, more preferably between 0.5 and 3, and M is H or a cation which can be, for example, a metal cation (e.g., sodium, potassium, lithium, calcium, magnesium, etc.), ammonium or substituted-ammonium cation. Alkyl ethoxylated sulphonates, alkyl butoxylated sulphonates as well as alkyl propoxylated sulphonates are contemplated herein. Specific examples of substituted ammonium cations include methyl-, dimethyl-, trimethyl-ammonium and quaternary ammonium cations, such as tetramethyl-ammonium, dimethyl piperdinum and cations derived from alkanolamines such as ethylamine, diethylamine, triethylamine, mixtures thereof, and the like. Exemplary surfactants are  $C_{12}-C_{18}$  alkyl polyethoxylate (1.0) sulphonate ( $C_{12}-C_{18}E(1.0) SO_3M$ ),  $C_{12}-C_{18}$  alkyl polyethoxylate (2.25) sulphonate ( $C_{12}-C_{18}E(2.25) SO_3M$ ),  $C_{12}-C_{18}$  alkyl polyethoxylate (3.0) sulphonate ( $C_{12}-C_{18}E(3.0) SO_3M$ ), and  $C_{12}-C_{18}$  alkyl polyethoxylate (4.0) sulphonate ( $C_{12}-C_{18}E(4.0) SO_3M$ ), wherein M is conveniently selected from sodium and potassium. Particularly suitable alkoxyated sulphonates include alkyl aryl polyether sulphonate like Triton X-200® commercially available from Union Carbide.

Suitable  $C_6-C_{20}$  alkyl alkoxyated linear or branched diphenyl oxide disulphonate surfactants for use herein are according to the following formula:



wherein R is a  $C_6-C_{20}$  linear or branched, saturated or unsaturated alkyl group, preferably a  $C_{12}-C_{18}$  alkyl group and more preferably a  $C_{14}-C_{16}$  alkyl group, and  $X^+$  is H or a cation, e.g., an alkali metal cation (e.g., sodium, potassium,

lithium, calcium, magnesium and the like). Particularly suitable C<sub>6</sub>-C<sub>20</sub> alkyl alkoxyated linear or branched diphenyl oxide disulphonate surfactants to be used herein are the C<sub>12</sub> branched di phenyl oxide disulphonic acid and C<sub>16</sub> linear di phenyl oxide disulphonate sodium salt respectively commercially available by DOW under the trade name Dowfax 2A1® and Dowfax 8390®.

Other anionic surfactants suitable herein include sulfosuccinate surfactants, alkyl carboxylate surfactants, sulfosuccinamate surfactants and sulfosuccinamide surfactants.

Suitable alkyl carboxylate surfactants for use herein are according to the formula RCO<sub>2</sub>M wherein : R represents a hydrocarbon group selected from the group consisting of straight or branched alkyl radicals containing from 6 to 20, preferably 8 to 18, more preferably 10 to 16, carbon atoms and alkyl phenyl radicals containing from 6 to 18 carbon atoms in the alkyl group. M is H or a cation, e.g., an alkali metal cation (e.g., sodium, potassium, lithium, calcium, magnesium and the like) or ammonium or substituted ammonium (e.g., methyl-, dimethyl-, and trimethyl ammonium cations and quaternary ammonium cations, such as tetramethyl-ammonium and dimethyl piperidinium cations and quaternary ammonium cations derived from alkylamines such as ethylamine, diethylamine, triethylamine, and mixtures thereof, and the like).

Other anionic surfactants useful for deterative purposes can also be used herein. These can include salts (including, for example, sodium, potassium, ammonium, and substituted ammonium salts such as mono-, di- and triethanolamine salts) of soap, sulphonated polycarboxylic acids prepared by sulphonation of the pyrolyzed product of alkaline earth metal citrates, e.g., as described in British patent specification No. 1,082,179, C<sub>8</sub>-C<sub>24</sub> alkylpolyglycolethersulfates (containing up to 10 moles of ethylene oxide); alkyl ester sulphonates such as C<sub>14-16</sub> methyl ester sulphonates; acyl glycerol sulphonates, fatty oleyl glycerol sulfates, alkyl phenol ethylene oxide ether sulfates, alkyl phosphates, isethionates such as the acyl isethionates, N-acyl taurates, sulfates of alkylpolysaccharides such as the sulfates of alkylpolyglucoside (the nonionic nonsulfated compounds being described below), branched primary alkyl sulfates, alkyl polyethoxy carboxylates such as those of the formula RO(CH<sub>2</sub>CH<sub>2</sub>O)<sub>k</sub>CH<sub>2</sub>COO-M<sup>+</sup> wherein R is a C<sub>8</sub>-C<sub>22</sub> alkyl, k is an integer from 0

to 10, and M is a soluble salt-forming cation. Resin acids and hydrogenated resin acids are also suitable, such as rosin, hydrogenated rosin, and resin acids and hydrogenated resin acids present in or derived from tall oil. Further examples are given in "Surface Active Agents and Detergents" (Vol. I and II by Schwartz, Perry and Berch). A variety of such surfactants are also generally disclosed in U.S. Patent 3,929,678, issued December 30, 1975, to Laughlin, et al. at Column 23, line 58 through Column 29, line 23 (herein incorporated by reference).

Other suitable anionic surfactants to be used herein also include acyl sarcosinate, in its acid and/or salt form. Being derivatives of natural fatty acids, said acyl sarcosinates are rapidly and completely biodegradable and have good skin compatibility.

Accordingly, suitable long chain acyl sarcosinates to be used herein include C<sub>12</sub> acyl sarcosinate (i.e., an acyl sarcosinate according to the above formula wherein M is hydrogen and R is an alkyl group of 11 carbon atoms) and C<sub>14</sub> acyl sarcosinate (i.e., an acyl sarcosinate according to the above formula wherein M is hydrogen and R is an alkyl group of 13 carbon atoms). C<sub>12</sub> acyl sarcosinate is commercially available, for example, as Hamposyl L-30<sup>®</sup> supplied by Hampshire. C<sub>14</sub> acyl sarcosinate is commercially available, for example, as Hamposyl M-30<sup>®</sup> supplied by Hampshire.

Suitable amphoteric surfactants to be used herein include amine oxides having the following formula  $R_1R_2R_3NO$  wherein each of  $R_1$ ,  $R_2$  and  $R_3$  is independently a saturated substituted or unsubstituted, linear or branched hydrocarbon chains of from 1 to 30 carbon atoms. Preferred amine oxide surfactants to be used according to the present invention are amine oxides having the following formula  $R_1R_2R_3NO$  wherein  $R_1$  is an hydrocarbon chain comprising from 1 to 30 carbon atoms, preferably from 6 to 20, more preferably from 8 to 16, most preferably from 8 to 12, and wherein  $R_2$  and  $R_3$  are independently substituted or unsubstituted, linear or branched hydrocarbon chains comprising from 1 to 4 carbon atoms, preferably from 1 to 3 carbon atoms, and more preferably are methyl groups.  $R_1$  may be a saturated substituted or unsubstituted linear or branched hydrocarbon chain. Suitable amine oxides for use herein are for instance natural blend C<sub>8</sub>-C<sub>10</sub> amine oxides as well as C<sub>12</sub>-C<sub>16</sub> amine oxides commercially available from Hoechst.

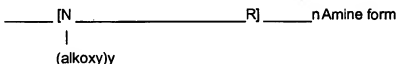
Anti-resoiling polymers

The compositions according to the present invention may comprise as a highly preferred, but optional ingredient an anti-resoiling polymer.

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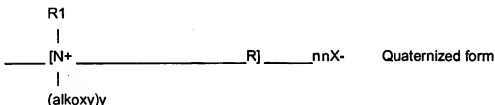
Suitable anti-resoiling polymers include soil suspending polyamine polymers. Any soil suspending polyamine polymer known to those skilled in the art may also be used herein. Particularly suitable polyamine polymers for use herein are alkoxyated polyamines. Such materials can conveniently be represented as

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15

and

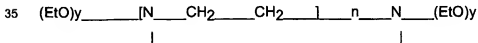


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wherein R is a hydrocarbyl group, usually of 2-6 carbon atoms; R<sub>1</sub> may be a C<sub>1</sub>-C<sub>20</sub> hydrocarbon; the alkoxy groups are ethoxy, propoxy, and the like, and y is from 2 to 30, most preferably from 7 to 20; n is an integer of at least 2, preferably from 2 to 40, most preferably from 2 to 5; and X- is an anion such as halide or methylsulfate, resulting from the quaternization reaction.

25

Highly preferred polyamines for use herein are the so-called ethoxylated polyethylene amines, i.e., the polymerized reaction product of ethylene oxide with ethyleneimine, having the general formula :



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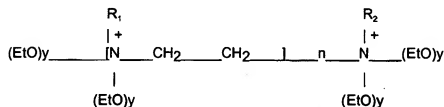
35

(EtO)<sub>y</sub>(EtO)<sub>y</sub>

wherein y is from 2 to 50, preferably from 5 to 30, and n is from 1 to 40, preferably from 2 to 40. Particularly preferred for use herein is an ethoxylated polyethylene amine, in particular an ethoxylated polyethylene amine wherein n=2 and y=20, and an ethoxylated polyethylene amine wherein n=40 and y=7.

Suitable ethoxylated polyethylene amines are commercially available from Nippon Shokubai CO., LTD under the product names ESP-0620A® (ethoxylated polyethylene amine wherein n=2 and y=20) or from BASF under the product names ES-8165 and from BASF under the product name LUTENSIT K - 187/50® (ethoxylated polyethylene amine wherein n=40 and y=7).

Furthermore, highly preferred polyamines for use herein are the so-called ethoxylated polyethylene quaternized amines having the general formula :



wherein y is from 2 to 50, preferably from 5 to 30, and n is from 1 to 40, preferably from 2 to 40 and R<sub>1</sub> and R<sub>2</sub> are independently a C<sub>1</sub>-C<sub>20</sub> hydrocarbon.

Particularly preferred for use herein is an ethoxylated polyethylene amine, in particular an ethoxylated polyethylene amine wherein n=2 and y=20, and an ethoxylated polyethylene amine wherein n=40 and y=7.

Particularly preferred herein is 24-Ethoxylated Hexamethylene Diamine Quaternized methyl chloride (EHDQ), commercially available from BASF under the trade name Lutensit K-HD 96®.

#### Thickener

The compositions according to the present invention may comprise as a highly preferred, but optional ingredient a thickener.

Preferred compositions of the present invention may have a viscosity of 1 cps or greater, more preferably of from 5 to 5000 cps, and still more preferably of from 10 to 2500 cps when measured with a CSL<sup>2</sup> 100® Rheometer at 20°C with a 4 cm spindle (linear increment from 10 to 100 dyne/cm<sup>2</sup> in 2 minutes).

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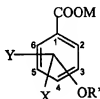
Typically, the bleaching compositions according to the present invention may comprise from 0.001% to 10%, preferably from 0.05% to 5% and more preferably from 0.1% to 1.0 % by weight of the total composition of a thickener.

#### 10 Alkoxyated benzoic acid

The compositions according to the present invention, preferably the compositions according to the present invention used in a process of treating a fabric, as described herein, may comprise as a highly preferred, but optional ingredient an alkoxyated benzoic acid or a salt thereof.

15

Generally, the alkoxyated benzoic acid or the salt thereof has the general formula :



20

wherein : the substituents of the benzene ring X and Y are independently selected from -H, or -OR'; R' is independently selected from C<sub>1</sub> to C<sub>20</sub> linear or branched alkyl chains, preferably R' is independently selected from C<sub>1</sub> to C<sub>5</sub> linear or branched alkyl chains, more preferably R' is -CH<sub>3</sub>, and; M is hydrogen, a cation or a cationic moiety. Preferably, M is selected from the group consisting of hydrogen, alkali metal ions and alkaline earth metal ions. More preferably, M is selected from the group consisting of hydrogen, sodium and potassium. Even more preferably, M is hydrogen.

25

30 Preferably, said alkoxyated benzoic acid or a salt thereof, is selected from the group consisting of : a monoalkoxy benzoic acid, or a salt thereof, a dialkoxy benzoic acid, or a salt thereof; a trialkoxy benzoic acid, or a salt thereof; and a mixture thereof. More preferably, said alkoxyated benzoic acid or a salt thereof,

is selected from the group consisting of : a dialkoxy benzoic acid, or a salt thereof; a trialkoxy benzoic acid, or a salt thereof; and a mixture thereof. Even more preferably, said alkoxyated benzoic acid or a salt thereof, is a trimethoxy benzoic acid or a salt thereof.

5

In a highly preferred embodiment of the present invention, said alkoxyated benzoic acid or the salt thereof is a trimethoxy benzoic acid or a salt thereof (TMBA), wherein in the above general formula : the substituents of the benzene ring Y and X are -OR'; R' is -CH<sub>3</sub> and; M is hydrogen, a cation or a cationic moiety.

10

Preferably, said alkoxyated benzoic acid or the salt thereof is selected from the group consisting of 3,4,5,- trimethoxy benzoic acid, a salt thereof, 2,3,4-trimethoxy benzoic acid, a salt thereof, 2,4,5- trimethoxy benzoic acid, a salt thereof and a mixture thereof. More preferably, said alkoxyated benzoic acid or the salt thereof is 3,4,5,- trimethoxy benzoic acid or a salt thereof. Even more preferably, said alkoxyated benzoic acid or the salt thereof is 3,4,5,- trimethoxy benzoic acid.

15

Suitable monoalkoxy benzoic acids or salts thereof are commercially available from Aldrich, in particular m-methoxy benzoic acid is commercially available from Aldrich. Suitable trimethoxy benzoic acids or salts thereof are commercially available from Aldrich and Merck.

20

Typically, the bleaching composition according to the present invention may comprise from 0.001% to 5%, preferably from 0.005% to 2.5% and more preferably from 0.01% to 1.0% by weight of the total composition of said alkoxyated benzoic acid or a salt thereof.

25

### 30 Builder

The bleaching compositions of the present invention may further comprise one or more builders and/or a modified polycarboxylate co-builder.

30

Suitable builders are selected from the group consisting of : organic acids and salts thereof; polycarboxylates; and mixtures thereof. Typically said builders have a calcium chelating constant (pKCa) of at least 3. Herein the pKCa the value of a

35



builder or a mixture thereof is measured using a 0.1M  $\text{NH}_4\text{Cl-NH}_4\text{OH}$  buffer (pH 10 at 25°C) and a 0.1% solution of said builder or mixture thereof with a standard calcium ion electrode.

- 5 Examples of builders are organic acids like citric acid, lactic acid, tartaric acid, oxalic acid, malic acid, monosuccinic acid, disuccinic acid, oxydisuccinic acid, carboxymethyl oxydisuccinic acid, diglycolic acid, carboxymethyl tartrate, ditartrate and other organic acid or mixtures thereof.
- 10 Suitable salts of organic acids include alkaline, preferably sodium or potassium, alkaline earth metal, ammonium or alkanolamine salts.

Such organic acids and the salts thereof are commercially available from Jungbunzlauer, Haarmann & Reimen, Sigma-Aldrich or Fluka.

15

Other suitable builders include a wide variety of polycarboxylate compounds. As used herein, "polycarboxylate" refers to compounds having a plurality of carboxylate groups, preferably at least 3 carboxylates. Polycarboxylate builder can generally be added to the composition in acid form, but can also be added in the form of a neutralized salt or "overbased". When utilized in salt form, alkali metals, such as sodium, potassium, and lithium, or alkanolammonium salts are preferred.

20

Useful polycarboxylates include homopolymers of acrylic acid and copolymers of acrylic acid and maleic acid.

25

Other useful polycarboxylate builders include the ether hydroxypolycarboxylates, copolymers of maleic anhydride with ethylene or vinyl methyl ether, 1,3,5-trihydroxy benzene-2,4,6-trisulfonic acid, and carboxymethyloxysuccinic acid, the various alkali metal, ammonium and substituted ammonium salts of polyacetic acids such as nitrilotriacetic acid, as well as polycarboxylates such as mellitic acid, succinic acid, oxydisuccinic acid, polymaleic acid, benzene 1,3,5-tricarboxylic acid, carboxymethyloxysuccinic acid, and soluble salts thereof.

30

- 35 Suitable polycarboxylates are commercially available from Rohm & Haas under the trade name Norasol® or Acusol®.

Preferred builders herein are selected from the group consisting of : citric acid; tartaric acid; tartrate monosuccinate; tartrate disuccinate; lactic acid; oxalic acid; and malic acid; and mixtures thereof. Even more preferred builders herein are selected from the group consisting of : citric acid; tartaric acid; tartrate monosuccinate; tartrate disuccinate; and malic acid; and mixtures thereof. The most preferred builders herein are selected from the group consisting of : citric acid; tartaric acid; tartrate monosuccinate; and tartrate disuccinate; and mixtures thereof.

10

Typically the bleaching compositions herein may comprise up to 40%, preferably from 0.01% to 25%, more preferably from 0.1% to 15%, and most preferably from 0.5% to 10% by weight of the total composition of said builder.

15 The compositions of the present invention may further comprise a modified polycarboxylate co-builder.

The term "polycarboxylate" refers to compounds having a plurality of carboxylate groups, preferably at least 3 carboxylates.

20

By "modified polycarboxylate" it is meant herein that at least at one end of the polycarboxylate compound, i.e., the polycarboxylate chain, said compound is modified by a functional group, e.g., a phosphono group.

25 Preferred modified polycarboxylate co-builders are polycarboxylates with phosphono end groups.

By "phosphono end group" it is meant herein a phosphono functional group according to the formula :

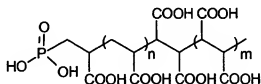
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wherein each M is independently H or a cation, preferably both M are H.

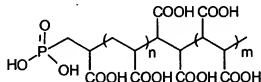
Examples of suitable polycarboxylates with phosphono end groups are copolymers of acrylic acid and maleic acid having a phosphono end group and homopolymers of acrylic acid having a phosphono end group.

- 5 A preferred modified polycarboxylate is a copolymer of acrylic acid and maleic acid with a phosphonic/phosphono end group according to the general formula :



- 10 having an average molecular weight of from 1000 to 100000, preferably an average molecular weight of from 1000 to 20000, more preferably an average molecular weight of from 1000 to 10000, and most preferably an average molecular weight of from 1500 to 5000; wherein n is from 10 mol% to 90 mol%, preferably 80 mol% and m is from 10 mol% to 90 mol%, preferably 20 mol%.

- 15 Accordingly, an example of a suitable modified polycarboxylate is a copolymer of acrylic acid and maleic acid (80/20) with a phosphonic/phosphono end group according to the formula :



wherein n is 80 mol% and m is 20 mol%; having an average molecular weight of 2000.

- 20 Such modified polycarboxylate are available from Rohm & Haas under the trade name Acusol 425®, Acusol 420® or Acusol 470®.

- 25 Typically the bleaching compositions herein may comprise up to 40%, preferably from 0.01% to 25%, more preferably from 0.1% to 15%, and most preferably from 0.5% to 5% by weight of the total composition of said modified polycarboxylate co-builder.

### Chelating agents

- The bleaching compositions of the present invention may comprise a chelating agent as a preferred optional ingredient. Suitable chelating agents may be any of those known to those skilled in the art, such as the ones selected from the group comprising phosphonate chelating agents, amino carboxylate chelating agents, other carboxylate chelating agents, polyfunctionally-substituted aromatic chelating agents, ethylenediamine N,N'-disuccinic acids, or mixtures thereof.
- A chelating agent may be desired in the compositions of the present invention as it allows to increase the ionic strength of the compositions herein and thus their stain removal and bleaching performance on various surfaces. The presence of chelating agents may also contribute to reduce the tensile strength loss of fabrics and/or color damage, especially in a laundry through the wash application.
- Indeed, the chelating agents inactivate the metal ions present on the surface of the fabrics and/or in the cleaning compositions (neat or diluted) that otherwise would contribute to the radical decomposition of the peroxygen bleach.

- Suitable phosphonate chelating agents to be used herein may include alkali metal ethane 1-hydroxy diphosphonates (HEDP), alkylene poly (alkylene phosphonate), as well as amino phosphonate compounds, including amino aminotri(methylene phosphonic acid) (ATMP), nitrilo trimethylene phosphonates (NTP), ethylene diamine tetra methylene phosphonates, and diethylene triamine penta methylene phosphonates (DTPMP). The phosphonate compounds may be present either in their acid form or as salts of different cations on some or all of their acid functionalities. Preferred phosphonate chelating agents to be used herein are diethylene triamine penta methylene phosphonate (DTPMP) and ethane 1-hydroxy diphosphonate (HEDP). Such phosphonate chelating agents are commercially available from Monsanto under the trade name DEQUEST®.

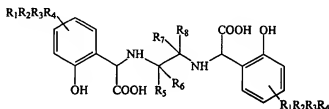
- Polyfunctionally-substituted aromatic chelating agents may also be useful in the compositions herein. See U.S. patent 3,812,044, issued May 21, 1974, to Connor et al. Preferred compounds of this type in acid form are dihydroxydisulfobenzenes such as 1,2-dihydroxy-3,5-disulfobenzene.

A preferred biodegradable chelating agent for use herein is ethylene diamine N,N'-disuccinic acid, or alkali metal, or alkaline earth, ammonium or substitutes ammonium salts thereof or mixtures thereof. Ethylenediamine N,N'-disuccinic acids, especially the (S,S) isomer, have been extensively described in US patent  
 5 4, 704, 233, November 3, 1987, to Hartman and Perkins. Ethylenediamine N,N'-disuccinic acid is, for instance, commercially available under the tradename ssEDDS® from Palmer Research Laboratories.

Suitable amino carboxylates to be used herein include ethylene diamine tetraacetates, diethylene triamine pentaacetates, diethylene triamine pentaacetate  
 10 (DTPA), N-hydroxyethylethylenediamine triacetates, nitrilotri-acetates, ethylenediamine tetrapropionates, triethylenetetraaminehexa-acetates, ethanol-diglycines, propylene diamine tetracetic acid (PDTA) and methyl glycine di-acetic acid (MGDA), both in their acid form, or in their alkali metal, ammonium, and  
 15 substituted ammonium salt forms. Particularly suitable amino carboxylates to be used herein are diethylene triamine penta acetic acid, propylene diamine tetracetic acid (PDTA) which is, for instance, commercially available from BASF under the trade name Trilon FS® and methyl glycine di-acetic acid (MGDA).

20 Further carboxylate chelating agents to be used herein include salicylic acid, aspartic acid, glutamic acid, glycine, malonic acid or mixtures thereof.

Another chelating agent for use herein is of the formula:



25

wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are independently selected from the group consisting of -H, alkyl, alkoxy, aryl, aryloxy, -Cl, -Br, -NO<sub>2</sub>, -C(O)R', and -SO<sub>2</sub>R"; wherein R' is selected from the group consisting of -H, -OH, alkyl, alkoxy, aryl, and aryloxy; R" is selected from the group consisting of alkyl, alkoxy, aryl, and aryloxy; and R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub> are independently selected from the group  
 30 consisting of -H and alkyl.

Particularly preferred chelating agents to be used herein are amino aminotri(methylene phosphonic acid), di-ethylene-triamino-pentaacetic acid, diethylene triamine penta methylene phosphonate, 1-hydroxy ethane  
5 diposphonate, ethylenediamine N, N'-disuccinic acid, and mixtures thereof.

Typically, the bleaching compositions according to the present invention may comprise up to 5%, preferably from 0.01% to 1.5% by weight and more preferably  
10 from 0.01% to 0.5% by weight of the total composition of a chelating agent.

#### Solvents

The bleaching compositions according to the present invention may further  
15 comprise a solvent.

Preferred solvents herein include hydrophobic solvents, hydrophilic solvents and mixtures hereof.

Typically, the bleaching compositions according to the present invention may  
20 comprise up to 30%, preferably from 0.01% to 15%, more preferably from 0.1% to 10%, and most preferably from 0.5% to 5% by weight of the total composition of a solvent.

Solvents, when present, contribute to the excellent stain removal performance of  
25 the bleaching compositions as described herein.

#### Foam reducing agent or system

The bleaching compositions according to the present invention may further  
30 comprise a foam reducing agent or a foam reducing system. Any foam reducing agents known to those skilled in the art are suitable for use herein. In a preferred embodiment a foam reducing system comprising a fatty acid together with a capped alkoxylated nonionic surfactant as defined herein after and/or silicone is used.

Typically, the bleaching compositions herein may comprise from  $1 \cdot 10^{-4}\%$  to 10%, preferably from  $1 \cdot 10^{-3}\%$  to 5% and more preferably from  $1 \cdot 10^{-2}\%$  to 5% by weight of the total composition of a fatty acid.

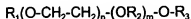
- 5 Typically, the bleaching compositions herein may comprise from  $1 \cdot 10^{-3}\%$  to 20%, preferably from  $1 \cdot 10^{-2}\%$  to 10% and more preferably from  $5 \cdot 10^{-2}\%$  to 5% by weight of the total composition of a capped alkoxyated nonionic surfactant as defined herein.
- 10 Typically, the bleaching compositions herein may comprise from  $1 \cdot 10^{-5}\%$  to 5%, preferably from  $1 \cdot 10^{-5}\%$  to 1% and more preferably from  $1 \cdot 10^{-4}\%$  to 0.5% by weight of the total composition of a silicone.

- Suitable fatty acids for use herein are the alkali salts of a  $C_8$ - $C_{24}$  fatty acid. Such
- 15 alkali salts include the metal fully saturated salts like sodium, potassium and/or lithium salts as well as the ammonium and/or alkylammonium salts of fatty acids, preferably the sodium salt. Preferred fatty acids for use herein contain from 8 to 22, preferably from 8 to 20 and more preferably from 8 to 18 carbon atoms.

- 20 Suitable fatty acids may be selected from caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, and mixtures of fatty acids suitably hardened, derived from natural sources such as plant or animal esters (e.g., palm oil, coconut oil, soybean oil, castor oil, tallow, ground oil, whale and fish oils and/or babassu oil.

- 25 For example Coconut Fatty Acid is commercially available from UNICHEMA under the name PRIFAC 5900®.

- Suitable capped alkoxyated nonionic surfactants for use herein are according to the formula:
- 30



- wherein  $R_1$  is a  $C_8$ - $C_{24}$  linear or branched alkyl or alkenyl group, aryl group, alkaryl group, preferably  $R_1$  is a  $C_8$ - $C_{18}$  alkyl or alkenyl group, more preferably a
- 35  $C_{10}$ - $C_{15}$  alkyl or alkenyl group, even more preferably a  $C_{10}$ - $C_{15}$  alkyl group;

wherein  $R_2$  is a  $C_1$ - $C_{10}$  linear or branched alkyl group, preferably a  $C_2$ - $C_{10}$  linear or branched alkyl group, preferably a  $C_3$  group;

wherein  $R_3$  is a  $C_1$ - $C_{10}$  alkyl or alkenyl group, preferably a  $C_1$ - $C_5$  alkyl group,  
5 more preferably methyl;

and wherein  $n$  and  $m$  are integers independently ranging in the range of from 1 to 20, preferably from 1 to 10, more preferably from 1 to 5; or mixtures thereof.

10 These surfactants are commercially available from BASF under the trade name Plurafac®, from HOECHST under the trade name Genapol® or from ICI under the trade name Symperonic®. Preferred capped nonionic alkoxyated surfactants of the above formula are those commercially available under the tradename Genapol® L 2.5 NR from Hoechst, and Plurafac® from BASF.

15 Suitable silicones for use herein include any silicone and silica-silicone mixtures. Silicones can be generally represented by alkylated polysiloxane materials while silica is normally used in finely divided forms exemplified by silica aerogels and xerogels and hydrophobic silicas of various types. These materials can be  
20 incorporated as particulates in which the silicone is advantageously releasably incorporated in a water-soluble or water-dispersible, substantially non-surface-active detergent impermeable carrier. Alternatively, the silicone can be dissolved or dispersed in a liquid carrier and applied by spraying on to one or more of the other components.

25 Actually in industrial practice, the term "silicone" has become a generic term, which encompasses a variety of relatively high-molecular-weight polymers containing siloxane units and hydrocarbyl groups of various types. Indeed, silicone compounds have been extensively described in the art, see for instance  
30 US 4 076 648, US 4 021 365, US 4 749 740, US 4 983 316, EP 150 872, EP 217 501 and EP 499 364. The silicone compounds disclosed therein are suitable in the context of the present invention. Generally, the silicone compounds can be described as siloxanes having the general structure :

35

$$\begin{array}{c} R \\ | \end{array}$$





- 5 wherein n is from 20 to 2000, and where each R independently can be an alkyl or an aryl radical. Examples of such substituents are methyl, ethyl, propyl, isobutyl, and phenyl. Preferred polydiorganosiloxanes are polydimethylsiloxanes having trimethylsilyl end blocking units and having a viscosity at 25°C of from  $5 \times 10^{-5}$  m<sup>2</sup>/s to 0.1 m<sup>2</sup>/s, i.e., a value of n in the range 40 to 1500. These are preferred  
10 because of their ready availability and their relatively low cost.

A preferred type of silicone compounds useful in the compositions herein comprises a mixture of an alkylated siloxane of the type herein above disclosed and solid silica.

15

- The solid silica can be a fumed silica, a precipitated silica or a silica made by the gel formation technique. The silica particles can be rendered hydrophobic by treating them with dialkylsilyl groups and/or trialkylsilane groups either bonded directly onto the silica or by means of silicone resin. A preferred silicone  
20 compound comprises a hydrophobic silanated, most preferably trimethylsilanated silica having a particle size in the range from 10 nm to 20 nm and a specific surface area above 50 m<sup>2</sup>/g. Silicone compounds employed in the compositions according to the present invention suitably have an amount of silica in the range of 1 to 30% (more preferably 2.0 to 15%) by weight of the total weight of the  
25 silicone compounds resulting in silicone compounds having an average viscosity in the range of from  $2 \times 10^{-4}$  m<sup>2</sup>/s to 1 m<sup>2</sup>/s. Preferred silicone compounds may have a viscosity in the range of from  $5 \times 10^{-3}$  m<sup>2</sup>/s to 0.1 m<sup>2</sup>/s. Particularly suitable are silicone compounds with a viscosity of  $2 \times 10^{-2}$  m<sup>2</sup>/s or  $4.5 \times 10^{-2}$  m<sup>2</sup>/s.

30

Suitable silicone compounds for use herein are commercially available from various companies including Rhone Poulenc, Fueller and Dow Corning. Examples of silicone compounds for use herein are Silicone DB® 100 and Silicone Emulsion 2-3597® both commercially available from Dow Corning.

35

Another silicone compound is disclosed in Bartollota et al. U.S. Patent 3 933 672. Other particularly useful silicone compounds are the self-emulsifying silicone compounds, described in German Patent Application DTOS 2 646 126 published April 28, 1977. An example of such a compound is DC-544®, commercially  
5 available from Dow Corning, which is a siloxane-glycol copolymer.

Typically preferred silicone compounds are described in European Patent application EP-A-573699. Said compositions can comprise a silicone/silica mixture in combination with fumed nonporous silica such as Aerosil®.  
10

#### Antioxidant

The bleaching compositions according to the present invention may further  
15 comprise an antioxidant.

Typically, the bleaching compositions herein may comprise up to 10%, preferably from 0.002% to 5%, more preferably from 0.005% to 2%, and most preferably from 0.01% to 1% by weight of the total composition of an antioxidant.  
20

Suitable antioxidants to be used herein include organic acids like citric acid, ascorbic acid, tartaric acid, adipic acid and sorbic acid, or amines like lecithin, or aminoacids like glutamine, methionine and cysteine, or esters like ascorbil palmitate, ascorbil stearate and triethylcitrate, or mixtures thereof. Preferred  
25 antioxidants for use herein are citric acid, ascorbic acid, ascorbil palmitate, lecithin or mixtures thereof.

#### Bleach activator

As an optional ingredient, the compositions of the present invention may  
30 comprise a bleach activator. By "bleach activator", it is meant herein a compound, which reacts with hydrogen peroxide to form a peracid. The peracid thus formed constitutes the activated bleach. Suitable bleach activators to be used herein include those belonging to the class of esters, amides, imides, or anhydrides. Examples of suitable compounds of this type are disclosed in British Patent GB 1  
35 586 769 and GB 2 143 231 and a method for their formation into a prilled form is described in European Published Patent Application EP-A-62 523. Suitable

examples of such compounds to be used herein are tetracetyl ethylene diamine (TAED), sodium 3,5,5 trimethyl hexanoyloxybenzene sulphonate, diperoxy dodecanoic acid as described for instance in US 4 818 425 and nonylamide of peroxyadipic acid as described for instance in US 4 259 201 and n-  
5 nonanoyloxybenzenesulphonate (NOBS). Also suitable are N-acyl caprolactams selected from the group consisting of substituted or unsubstituted benzoyl caprolactam, octanoyl caprolactam, nonanoyl caprolactam, hexanoyl caprolactam, decanoyl caprolactam, undecenoyl caprolactam, formyl caprolactam, acetyl caprolactam, propanoyl caprolactam, butanoyl caprolactam  
10 pentanoyl caprolactam or mixtures thereof. A particular family of bleach activators of interest was disclosed in EP 624 154, and particularly preferred in that family is acetyl triethyl citrate (ATC). Acetyl triethyl citrate has the advantage that it is environmental-friendly as it eventually degrades into citric acid and alcohol. Furthermore, acetyl triethyl citrate has a good hydrolytical stability in the product  
15 upon storage and it is an efficient bleach activator. Finally, it provides good building capacity to the composition.

The bleaching compositions according to the present invention may comprise from 0.01% to 20%, preferably from 1% to 10%, and more preferably from 3% to  
20 7% by weight of the total composition of said bleach activator.

#### Sulphonated hydrotrope

The bleaching compositions according to the present invention may further comprise a sulphonated hydrotrope.

25 Any sulphonated hydrotropes known to those skilled in the art are suitable for use herein. In a preferred embodiment alkyl aryl sulphonates or alkyl aryl sulphonic acids are used. Preferred alkyl aryl sulphonates include sodium, potassium, calcium and ammonium xylene sulphonates, sodium, potassium, calcium and  
30 ammonium toluene sulphonates, sodium, potassium, calcium and ammonium cumene sulphonates, sodium, potassium, calcium and ammonium substituted or unsubstituted naphthalene sulphonates and mixtures thereof. Preferred alkyl aryl sulphonic acids include xylenesulphonic acid, toluenesulphonic acid, cumenesulphonic acid, substituted or unsubstituted naphthalenesulphonic acid  
35 and mixtures thereof. More preferably, xylenesulphonic acid or p-toluene sulphonate or mixtures thereof are used.

Typically, the bleaching compositions herein comprise from 0.01% to 20% by weight of the total composition of a sulphonated hydrotrope, preferably from 0.05% to 10% and more preferably from 0.1% to 5%.

5

Examples

- The following examples will further illustrate the present invention. The compositions are made by combining the listed ingredients in the listed proportions (weight % unless otherwise specified). The following Examples are meant to exemplify compositions used in a process according to the present invention but are not necessarily used to limit or otherwise define the scope of the present invention.

Compositions	I	II	III	IV	V	VI	VII	VIII
Dobanol® 23-3	2.0	1.0	1.0	2.0	1.5	-	-	-
Dobanol® 91-10	2.0	3.0	-	-	-	2.0	2.0	-
Marlipal® 24-7	-	-	3.0	2.0	2.0	2.0	-	1.0
Marlipal® 24-4	-	-	-	-	1.0	1.0	1.5	1.0
BHT	-	-	-	-	-	-	-	-
Hydrogen Peroxide	3.5	4.0	5.0	6.0	7.0	8.0	5.0	6.0
Water and minors	-----up to 100%-----							

- All examples have a pH of below 9

	Compositions	IX	X	XI	XII	XIII	XIV	XV	XVI
	Dobanol® 23-3	-	0.5	1.0	-	-	-	-	-
5	Dobanol® 91-10	-	-	-	-	-	3.0	2.0	5.0
	Marlipal® 24-7	2.0	2.5	1.0	4.0	7.0	3.0	2.0	5.0
	Marlipal® 24-4	1.0	0.5	1.0	1.0	-	-	-	-
10	BHT	-	0.2	0.1	0.1	0.2	0.1	-	-
	Hydrogen Peroxide	8.0	6.0	7.0	4.0	5.0	6.0	7.0	8.0
15	Water and minors	-----up to 100%-----							

All examples have a pH of below 9

- 20 Dobanol® 23-3 is a C<sub>12</sub>-C<sub>13</sub> EO3 nonionic surfactant commercially available from SHELL.  
 Dobanol® 45-7 is a C<sub>14</sub>-C<sub>15</sub> EO7 nonionic surfactant commercially available from SHELL.  
 Dobanol® 91-8 is a C<sub>9</sub>-C<sub>11</sub> EO8 nonionic surfactant commercially available from SHELL.
- 25 Dobanol® 91-10 is a C<sub>9</sub>-C<sub>11</sub> EO10 nonionic surfactant commercially available from SHELL.  
 Marlipal® 24-4 is a linear C<sub>12</sub>-C<sub>14</sub> EO4 nonionic surfactant commercially available from Condea.
- 30 Marlipal® 24-7 is a linear C<sub>12</sub>-C<sub>14</sub> EO7 nonionic surfactant commercially available from Condea.  
 Hydrogen Peroxide is commercially available from Ausimont.

- 35 The above liquid bleaching compositions I to XVI are contained in a plastic bottle (the container herein) having associated thereto, by means of a label glued onto said container, a set of instructions; wherein said set of instructions comprises

- instructions to contact dark colored fabric items with said liquid bleaching composition in its neat or diluted form and wash said dark colored fabric items in an aqueous bath comprising water and a conventional laundry detergent before and/or during and/or after the step of contacting said dark colored fabric items
- 5 with said liquid bleaching composition.

Claims

1. An article of manufacture comprising : a container; a set of instructions; and  
a liquid bleaching composition comprising a peroxygen bleach; wherein said  
set of instructions comprises instructions to contact dark colored fabric items  
with said liquid bleaching composition in its neat or diluted form and wash  
said dark colored fabric items in an aqueous bath comprising water and a  
conventional laundry detergent before and/or during and/or after the step of  
contacting said dark colored fabric items with said liquid bleaching  
composition and wherein said container contains said liquid bleaching  
composition.
2. An article of manufacture according to claim 1, wherein said set of  
instructions comprises instructions to contact said dark colored fabric items  
with an effective amount of said liquid bleaching composition in its neat or  
diluted form.
3. An article of manufacture according to any of the preceding claims, wherein  
an effective amount of liquid bleach composition in diluted condition is an  
amount that provides from 1 to 15 grams, preferably from 2 to 10, and more  
preferably from 2.5 to 5 grams of peroxygen bleach per kilogram of dry  
fabric.
4. An article of manufacture according to any of the preceding claims, wherein  
an effective amount of liquid bleach composition in neat condition is an  
amount that provides from 25 to 100 grams, preferably from 30 to 75, and  
more preferably from 40 to 60 grams of peroxygen bleach per kilogram of  
dry fabric.
5. An article of manufacture according to any of the preceding claims, wherein  
said dark colored fabric items herein are colored by a single dark color, or  
are colored by a pattern or design composed of a multitude of dark colors or  
a pattern or design composed of a mixture of at least one dark color and at  
least one light color, wherein said dark color or dark colors constitute at  
least 50%, preferably 60%, more preferably 75%, of the total surface area of  
said pattern or design.



- 5 6. An article of manufacture according to any of the preceding claims, wherein said dark colored fabric items are colored by a color having a luminosity dimension  $L^*$  of from 35 to 0, preferably 25 to 0, more preferably 15 to 0 and most preferably 0.
- 10 7. An article of manufacture according to any of the preceding claims, wherein said dark colored fabric items are black or have a pattern or design composed of a mixture of black and other colors, wherein at least 50%, preferably 60%, more preferably 75%, of the total surface area of said pattern or design is black.
- 15 8. An article of manufacture according to any of the preceding claims, wherein said article of manufacture in addition to the usage instructions bears an additional indication comprising a term selected from the group consisting of : noir, black, bleach for blacks, bleach noir, dark bleach, bleach for darks, bleach dark colors, bleach for black colors, for black fabrics, for dark fabrics, negro, nero, preto, schwarz, dark, oscuro, escuro, scuro, and the like, and combinations thereof.
- 20 9. An article of manufacture according to any of the preceding claims, wherein said peroxygen bleach is selected from the group consisting of: hydrogen peroxide; water soluble sources of hydrogen peroxide; organic or inorganic peracids; hydroperoxides; and diacyl peroxides; and mixtures thereof.
- 25 10. An article of manufacture according to any of the preceding claims, wherein said bleaching composition as is has a pH, measured at 25°C, of no more than 9.
- 30 11. An article of manufacture according to any of the preceding claims, wherein said liquid bleaching composition comprises from 3% to 30% by weight of the total composition of said peroxygen bleach.

12. A method of instructing the public by providing to the public a set of instructions for use of an article of manufacture comprising a container; and a liquid bleaching composition comprising a peroxygen bleach; wherein said set of instructions comprises instructions to contact dark colored fabric items with said liquid bleaching composition in its neat or diluted form and wash said dark colored fabric items in an aqueous bath comprising water and a conventional laundry detergent before and/or during and/or after the step of contacting said dark colored fabric items with said liquid bleaching composition and wherein said container contains said liquid bleaching composition.
13. A method of instructing the public according to claim 12, wherein said instruction relates to safely treating dark colored fabric items with a liquid bleaching composition comprising a peroxygen bleach
14. A method of instructing the public according to any of claims 12 to 13, wherein said set of instructions comprises instructions to contact said dark colored fabric items with an effective amount of said liquid bleaching composition in its neat or diluted form.
15. A method of instructing the public according to claim 14, wherein an effective amount of liquid bleaching composition in diluted condition is an amount that provides from 1 to 15 grams, preferably from 2 to 10, and more preferably from 2.5 to 5 grams of peroxygen bleach per kilogram of dry fabric.
16. A method of instructing the public according to claim 14, wherein an effective amount of liquid bleaching composition in neat condition is an amount that provides from 25 to 100 grams, preferably from 30 to 75, and more preferably from 40 to 60 grams of peroxygen bleach per kilogram of dry fabric.

17. A method of instructing the public according to any of claims 12 to 16, wherein said dark colored fabric items herein are colored by a single dark color, or are colored by a pattern or design composed of a multitude of dark colors or a pattern or design composed of a mixture of at least one dark color and at least one light color, wherein said dark color or dark colors constitute at least 50%, preferably 60%, more preferably 75%, of the total surface area of said pattern or design.
18. A method of instructing the public according to any of claims 12 to 17, wherein said dark colored fabric items are colored by a color having a luminosity dimension  $L^*$  of from 35 to 0, preferably 25 to 0, more preferably 15 to 0, and most preferably 0.
19. A method of instructing the public according to any of claims 12 to 18, wherein said dark colored fabric items are black or have a pattern or design composed of a mixture of black and other colors, wherein at least 50%, preferably 60%, more preferably 75%, of the total surface area of said pattern or design is black.
20. A method of instructing the public according to any of claims 12 to 19, wherein said article of manufacture in addition to the usage instructions bears an additional indication comprising a term selected from the group consisting of : noir, black, bleach for blacks, bleach noir, dark bleach, bleach for darks, bleach dark colors, bleach for black colors, for black fabrics, for dark fabrics, negro, nero, preto, schwarz, dark, oscuro, escuro, scuro, and the like, and combinations thereof.
21. A method of instructing the public according to any of claims 12 to 20, wherein said peroxygen bleach is selected from the group consisting of: hydrogen peroxide; water soluble sources of hydrogen peroxide; organic or inorganic peracids; hydroperoxides; and diacyl peroxides; and mixtures thereof.

22. A method of instructing the public according to any of claims 12 to 21, wherein said bleaching composition as is has a pH, measured at 25°C, of no more than 9.
- 5 23. A method of instructing the public according to any of claims 12 to 22, wherein said liquid bleaching composition comprises from 3% to 30% by weight of the total composition of said peroxygen bleach.
- 10 24. A method of instructing the public according to any of claims 12 to 23, wherein said set of instructions is provided to the public via electronic and/or print media.
- 15 25. A method of instructing the public according to any of claims 12 to 23, wherein the set of instructions is posted at the point of sale adjacent the package
- 20 26. A method of instructing the public according to any of claims 12 to 23, wherein said set of instructions is posted on a global computer network at an address associated with the bleach composition and/or fabric.
- 25 27. A method of promoting the use of liquid bleaching composition comprising peroxygen bleach to safely bleach and/or remove stains from colored fabric comprising dark and/or black colored fabric, the method comprising the step of informing the public that the treatment of dark and/or black colored fabric with said composition reduces and/or prevents damage to the color of said fabric.
- 30 28. A method according to claim 27, wherein the step of informing the consumer is provided via electronic and/or print media.

## INTERNATIONAL SEARCH REPORT

 Int. Application No.  
PCT/US 02/29557

A. CLASSIFICATION OF SUBJECT MATTER		
IPC 7	C11D3/39	C11D17/04 D06L3/02 D06L3/16
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC 7 C11D D06L		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
WPI Data, EPO-Internal, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 776 966 A (PROCTER & GAMBLE) 4 June 1997 (1997-06-04) page 4, line 18 - line 23; claim 1; example 2	1,9-11
X	EP 0 913 462 A (PROCTER & GAMBLE) 6 May 1999 (1999-05-06) page 2, line 32 - line 35 page 2, line 48 - line 54 page 12, line 40 - page 13, line 31; claims 1,2,15	1,9-11
X	EP 1 010 750 A (PROCTER & GAMBLE) 21 June 2000 (2000-06-21) page 4, line 34 - line 36 page 13, line 35 - page 14, line 19 page 14, line 34 - line 40; claims 9-11	1,9-11
<input type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "S" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
10 January 2003		17/01/2003
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  Saunders, T

Form PCT/ISA/210 (second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 02/29557

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 1 (in part), 2-8, 12-28  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210**

Continuation of Box I.1

Claims Nos.: 1 (in part), 2-8, 12-28

The present application seeks to address the problem of consumers mistakenly believing that they can not use liquid bleaching compositions to treat dark coloured fabric items as part of a laundry process, the proposed solution being to provide instructions on the bleaching composition packaging, instructing the consumer to treat dark coloured fabric items with said composition, in order to reassure the consumer of the suitability of said composition for bleaching these items.

This does not amount to a technical feature, rather it can be regarded as a marketing technique, ie a mere presentation of information. A meaningful search is therefore not possible on the basis of all claims, since claims 1 (in part), 2-8 and 12-28 are directed to such a presentation of information - Rule 39.1(v) PCT.

The search has been restricted to those claims which specifically relate to the article per se, namely claims 1 (in part) and 9-11.

## INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 02/29557

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